

# The Fifth Book Of Natural Magick

## The Proeme

We are now come (according to that order which we proposed unto ourselves in the beginning) to those experiments which are commonly called by the name of Alchemy matters, wherein not only a great part of the world is conversant, but also every one is very desirous to be a practitioner in them, and does thirst after them with an unquenchable lust. Wherefore we are constrained to speak something concerning this subject the rather, because many rude and unskillful men, being drawn on, partly by the hope of gain, which they looked for by it, and partly by the pleasure and delight which they did take in it, have bestowed themselves in these experiments to the great slander both of the art itself, and also of the professors thereof. So that currently, a man cannot handle it without the scorn and obloquy of the world, because of the disgrace and contempt, which those idiots have brought upon it. For while they, being altogether ignorant of the principles of these things, have labored to make sophisticated and Counterfeit Gold, they have utterly miscarried in their endeavors, and wasted all their substance, and quite undone themselves, and so were deluded by that vain hope of Gold, which set them on work. Demetrius Phalereus said very well of these men, that which they should have gotten, says he, they did not get, and that which they had in their own possession, they lost, and so whereas they hoped to work a metamorphosis or alteration in the metals, the alteration and change has lighted heavily upon themselves, in respect of their own estate. And when they have thus overthrown themselves, they have no other comfort left them only this, to broach many lies and Counterfeit devices, whereby they may likewise deceive others, and draw them into the very same lurches which themselves have before fallen into. And surely the desire partly of the same lurches which themselves have before fallen into. And surely the desire partly of the art itself, and partly of the great gain which many men hoped after by the same, has filled the world with so many books, and such a infinite number of lies, that there is scarce any other matter in the like request. So that it was very well done of Dioclesian the Emperor, and it was high time for him so to do, to establish a decree, that all such lying books that were written concerning that matter, should be cast into the fire and burnt to ashes. Thus was an excellent good art discredited and disgraced by reason they abused it, which falls out also in many other better things then this is. The art of itself is not to be set at naught, but rather to be embraced and much to be sought after, especially by such as apply their minds to philosophy, and to the searching out of the secrecy's of nature. For they shall find in it many things which they will wonder at, and such as are exceeding necessary for the use of men. And when they shall behold the experience of many kinds of transmutations and sundry effects, it will be no small delight unto them, and besides, it will show them the way to more profound and worthier matters, such as the best and soundest philosophers have not been ashamed to search into, and to handle in their writings. I do not here promise any golden mountains, as they say, nor yet that Philosophers Stone, which the would has so great an opinion of, and has been bragged of in many ages, and happily attained unto by some. Neither yet do I promise here that golden Liquor, whereof if any man do drink, it is supposed that it will make him to be immortal, but it is a mere dream, for seeing that the world itself is variable and subject to alteration. Therefore it cannot be but that whatsoever the world yields, should likewise be subject to destruction. Sot that to promise or to undertake any such matters as these are, it were but rashness and pure foolishness. But the things which we purpose to discourse of and to deliver, are these which hereafter follow. And I would request the readers to take them in good part, and to content themselves with these. Left if they attempt to proceed to further experiments herein, they prove themselves as foolish and as mad as those which we have spoken of before. These things which here you shall find, I myself have seen, and proved by experience, and therefore I am the bolder to set them abroach to the view of the whole world. ...

## Chapter I

"Of Tin, and how it may be converted into a more excellent Metal"

In does Counterfeit and resemble Silver. And there is great amity and agreement between these two metals in respect of their color. The nature and the color of Tin is such, that it will whiten all other metals. But it makes them brittle and easier to be snap asunder. Only lead is free from this power of Tin. But he that can skillfully make a medley of this metal with others, may thereby attain to many pretty secrecy's. Wherefore, we will endeavor to Counterfeit Silver as near as we can. A matter which may be easily effected, if we can tell how to abolish and utterly destroy those imperfections, which are found in Tin, whereby it is to be discerned from Silver. The imperfections are these: First, it is found to make a creaking noise, and crashes more then Silver does, Secondly, it does not ring so pleasantly as Silver, but has a duller sound, Thirdly, it is of a more pale and wane color, And lastly, it is more soft and tender, for it be put into the fire, it is not first red hot before it be melted, as Silver will be, but it cling fast to the fire, and is soon overcome and molten by the heat thereof. These are the qualities that are observed to be in Tin, not the essential properties of the nature thereof, but only accidental qualities, and therefore they may be more easily expelled out of their subject. Let us see therefore how we may rid away these extrinsecal accidents, and first,

"How to remedy the softness of Tin, and the creaking noise that it makes"

You must first beat it into small powder, as you shall hereafter be instructed in the manner how to do it; and when you have so done, you must reduce it into the whole body again. And if it does not lose its softness at the first time as you deal so by it, use the same course the second time, and so likewise the third time rather then fail, and by this means you shall at length obtain your purpose: for by so doing, the Tin will wax so hard, that it will endure the fire till it be red hot, before ever it will melt. By the like practice we may also harden all other soft bodies, to make them red hot before they shall be melted. But the experience hereof is more clear in Tin then in any other metals whatsoever. We may also take away the creaking noise of Tin, if we melt it seven times, and quench it every time in the Urine of children, or else in the Oil of Walnuts. For this is the only means to expel that quality and imperfection out of it. Thus then we have declared the manner how to extract these accidents from it. But all this while we have not shown how it may be transformed into Silver. Which now we are to speak of, as ever we have shown the manner of...

"How to bring Tin into Powder."

Which we promised to teach. Let your Tin boil in the fire, and when it is very liquid, pour it forth into a great Mortar, and when it begins to wax cold, and to be congealed together again, you must stir it round about with a wooden Pestle, and let it not stand still in any case, thus shall you cause it congealed into very small crumbs as little as dust, And when you have so done, put it into a very fine ranging Sieve, and sift out the smallest of it, and that which is left behind in your Sieve, because it is to great and not broken well enough, you must put it into the fire again, and use the very same course with it to break it into smaller parts, as you used before, for unless it be thoroughly broken into powder, it is not serviceable, nor fit for your purpose. Having therefore shown you how to break your Tin into small crumbs, as also how to expel out of it those imperfections whereby is it most

manifestly discerned from Silver, both which things are very necessary preparative as it were to the main matter which we have in hand, let us now come to the principal experiment itself, namely,.....

#### "How to alter and transform Tin, that it may become Silver"

You must take an earthen vessel somewhat wide-mouthed, but is must be very strong and firmly made, that it be thoroughly able to ensure the vehemence of the fire, even to be red hot. Into this vessel put your Tin broken into such small crumbs as have been spoken of, and therein you must with an Iron ladle stir it up and down continually without ceasing, till it be all on a light fire, an yet none of the metal to be melted. When you have so done, that you have given it over, and it gathers together in one body or lump again, you must bestow the very same labor upon it a second time, so long as it may stand in small crumbs all on a fire for the space of six hours together, without melting. But if some part of the metal be melted by the vehement heat of the fire, and some other parts of it remain not melted, then you must take away that which is melted, and when it is congealed, you must break it into small powder once again, and you must run over your whole labor again , even in the same vessel and with the same instrument as before. After this, when you have brought all your metal to that perfection that it will endure the fire without melting, then you must put it into a glass-furnace where Glass is found to be made, or else into some oven that is made of purpose to reflex the heat of the fire to the best advantage, and there let it be tormented and applied with a very great fire for the space of three or four days together. Until such time as it is made perfectly white as snow. For the smaller that it is broken and beaten into powder, the more perfectly it will take white, and be the fitter for your purpose, and more exactly satisfies your expectation. After all this, you must , put it into a vessel that shall be almost full of Vinegar, and the Vinegar must cover all the Tin and swim about three or four inches above it. There you must Distill it , and let the Vinegar boil with it so long, till the Tin has colored it, and made it of his own hue, and thickened it into a more gross substance. Then let is stand a while; and when it is thoroughly settled, pour out that Vinegar and put in new, and temper it well with those ashes or crumbs of Tin. And this must you do again and again, till all your Tin be dissolved into Vinegar. If by this often repetition of this labor, you cannot effect such a dissolution, then you must put it once again to the fire in such a furnace, or else into such an oven as we spoke of before, that so it may be reduced into white ashes more exactly and perfectly, whereby it may be the more easily dissolved into Vinegar. After this, you must let the vapor of the Vinegar be exhaled and strained out, and the Tin that is left behind must be put into a certain vessel where the ashes have been found to be put. And then melt some Lead and put amongst it. And because the Lead that is put in will bear up the Tin aloft therefore you must make certain little balls or pills compounded of Soap and Lime, or else Saltpeter and Brimstone, or some other like fat earthy stuff, and cast them in among the Lead and Tin, and they will cause the Tin to drench itself within the Lead. And by this means, all your Tin that does take the Lead, and is incorporated into it by a just proportion and equal temperature, does become very excellent good Silver. But this is marvelous hard labor, and not to be achieved without very great difficulty. You may likewise alter and transform...

#### "Tin into Lead"

An easy matter for any man to effect, by reducing Tin into ashes or powder often times. For the often burning of it will cause the creaking noise which it is found to make, to be voided from it, and so to become Lead without any more ado. Especially, if you use a convenient fire, when you go about to reduce it into powder.

## Chapter II

### "Of Lead, and how it may be converted into another Metal"

The ancient writers that have been conversant in the nature of metals, are found to call Tin by the name of White Lead, and Lead, by the name of Black Tin. Insinuating thereby the affinity of the natures of these two metals, that they are very like each another, and therefore may very easily be one of them transformed into the other. It is no hard matter therefore, as to change Tin into Lead, which we have spoken of in the former chapter. See also...

### "To change Lead into Tin"

It may be effected only by bare washing of it. For if you bath or wash Lead often times, that is, if you often melt it, so that the dull and earthy substance of it be abolished, it will become Tin very easily. For the same Quicksilver, whereby the Lead was first made a subtle and pure substance, before it contracted that soil and earthiness which makes it so heavy, does still remain in the Lead, as Gebrus has observed, and this is it which causes that creaking and gnashing found, which Tin is found to yield, and whereby it is especially discerned from Lead. So that when the Lead has lost its own earthy lumpiness, which is expelled by often melting, and when it is endured with the sound of Tin, which the Quicksilver does easily work into it, there can be no difference put between them, but that the Lead is become Tin. It is also possible to transform...

### " Antimony into Lead"

For, that kind of Antimony which the Alchemists are found to call by the name of Regulus, if it be often burned in the fire, and be first thoroughly boiled, it turns into Lead. This experiment is observed by Dioscorides, who says, that if you take Antimony and burn it exceedingly in the fire, it is converted into Lead, Galen shows another experiment concerning Lead, namely...

### "How to procure Lead to become heavier, then of itself it is..."

For, whereas he had found by his experience, that Lead has in itself an ethereal or airy substance, he brings this experiment. Of all the metals, says he, that I been acquainted with, only Lead is increased in both in size and weight. For, if you lay it up in cellars or such other places of receipt that are under the ground, wherein there is a turbulent and gross foggy air, so that whatsoever is laid up in such rooms shall straight-away gather filth and soil, it will be greater and heavier the before it was. Yes, even the very clamps of Lead which have become fastened into carved images to knit their parts more strongly together, especially those that have been fastened about their feet, have been divers times found to have waxed bigger. And some of those clamps have been seen to swell so much, that whereas in the making of such images the Lead plates and pins were made level with the images themselves, yet afterwards they have been so swollen, as that they have stood forth like hillocks and knobs very unevenly, out of the Crystal stones whereof the images were made. This Lead, is a metal that has in it great store of Quicksilver , as may appear by this, because it is a very easy mastery,

### "To extract Quicksilver out of Lead"

Let your Lead be filed into very small dust, and to every two pound of Lead thus beaten into powder,

you must put one ounce of Saltpeter, and one ounce of ordinary common Salt, and one ounce of Antimony . Let all these be well beaten and pounded together, and put into a Sieve. And when they are well sifted, put them into a vessel made of Glass, and you must fence and plaster the Glass round about on the outward side with thick Loam tempered with chopped Straw, and it must be laid on very fast. And that it may stick up the vessel the better, your Glass must not be smooth but full of Rigoles, as if it were wrested or writhed. When your vessel is thus prepared, you must settle and apply it to a reflexed fire, that is, to a fire made in such a place, as will reflect and beat back the heat of it with great vehemence to the best advantage. And underneath your vessels neck, you must place a large pan, or some other such vessel of great capacity and receipt, which must be half full of cold water. Then close up all very fast and secure, and let your fire burn but a little, and give but a small heat for the space of two hours. Afterward it will make it greater, so that the vessel may be thoroughly heated by it, even to be red hot. Then set a blower to work, and let him not leave off to blow for the space of four whole hours together, and you shall see the Quicksilver drop down into the vessel that is half full of water, being sighted as it were, out of the metal by the vehement force of the fire. Commonly the Quicksilver will stick to the sides of the vessels neck, and therefore you must give the neck of the vessel a little jolt or blow with your hand, so that the Quicksilver will fall down into the water vessel. By this practice I have often extracted from every pound of metal almost a whole once of Quicksilver . Yes, sometimes more than an ounce, when I have been very diligent and laborious in performing the work. Another experiment I have seen, which drew me into great admiration,

#### "Lead Converted into Quicksilver "

A Counterfeiting practice, which is the chief cause that all the Quicksilver almost which is usually to be had, is but bastard stuff, and merely Counterfeit. Yet it is bought and sold for current, by reason of the near likeness it has with the best. Let there be one pound of Lead melted in an earthen vessel, and then put into it one ounce of that tinny metal by the name of Marchasite. And when they are both melted together you must stir them up and down, and temper them to a perfect medley with a wooden ladle. In the mean space you must have four pounds of Quicksilver warmed in another vessel standing by, to cast in upon that compounded metal, for unless your Quicksilver be warm, it will not close nor agree well with your metals. Then temper your Quicksilver and metal together for a while and presently after, cast into cold water, so shall it not congeal into any hard lump, but float on the top of the water, and be very quick and lively. The only blemish it has, and that which only may be excepted against it, is this, that it is somewhat pale and wan, and not all things so nimble and lively as the true Quicksilver is, but is more slow and slimy, drawing as it were a tail after it, as other viscous and slimy things are found to do. But put into a vessel of Glass, and lay it up for a while, for the longer you keep it, the quicker and nimbler it will be.

#### Chapter III

#### "Of Brass, and how to transform it into a worthier Metal"

We will now allege certain experiments concerning Brass. Which though they are but slight and trivial, yet we will not omit to speak of them, because we would fain satisfy the humor of those, who have a great desire to read of and be acquainted with such matters. And here we are to speak of such things that are good to stain the bodies of metals with some other color they are naturally endued with. Yet I must confess that these are but fained and Counterfeit colorings, such as will not

last and stick by their bodies forever. Neither yet are they able to abide by any trial, but as soon as ever they come to the touchstone, they may easily be discerned to be but Counterfeits. However, as they are not greatly to be desired, because they are but deceivable, yet notwithstanding they are not utterly to be rejected as things of no value. And because there are very few books extant which treat of any argument of like kind as this is, but they are full of such experiments and sleights as here offer themselves to be handled by us (for they are very common things, and in every man's mouth) therefore we will in this place speak only of those things which are easily to be obtained, and carry with them a very goodly show, inasmuch that the best and sharpest censure may be deluded and mistaken by the beautiful gloss that is cast upon them. And it may gravel the quickest and skillful judgment, to define upon the thing whether they are true or Counterfeit. Yet let them be esteemed no better then they deserve. But this you must know, that as slight and trivial as they are, yet they require the handling of a very skillful artificer. And whoever you are who goes about to practice these experiments, if you are not a skillful and well experienced workman yourself, be sure to take the advice and counsel of those that are very good artists in this kind. For otherwise you will certainly miscarry in them and be defeated in your purpose. The chief and essential things that are of force to endue Brass with a whiter color, are these. Arsenic or Oker, that kind of Quicksilver that is sublimated, as the Alchemists call it, the foam or froth of Silver, which is called by the Greeks, Lithargyron. The Marchasite or Fire-stone, the Lees of wine, that kind of Salt which is found in Africa under the sand, when the Moon is full, which is commonly called by the name of Al-hali, Saltpeter, and lastly Alome. If you extract the Liquor out of any of these, or out of all of these, and when it is dissolved, put your Brass, being red hot, into it to be quenched, your Brass will become white. Or else if you melt your Brass, and as soon as it is molten, put it into such Liquor, your Brass will become white. Or else, if you draw forth into very small and thin plates, and pound those bodies we now speak of, into small powder, and then cast both the Brass that is to be colored, and the bodies that must collar it, into a melting or casting vessel, and there temper them together to good media, and keep them a great while in the fire, that it may be thoroughly melted, the Brass will become white. Or else, if you melt your Brass, and then cast upon it some of that coloring in small lumps, (for if you cast it in powder and dust, it is a doubt that the force and rage of the fire will utterly consume it, so that it shall not be able to infect or stain the metal) but if you cast good store of such coloring upon the molten Brass, it will endure your Brass with a strange and wonderful whiteness, inasmuch that it will seem to be very Silver looking indeed. But that you may learn the better, how to work such experiments, and besides, that you may by occasion of those things which are here set down, learn how to compound and work other matters, we will now set forth unto you certain examples, how we may make...

#### "Brass to Counterfeit Silver..."

For when once you are trained up a little in the practice of these matters, then they will sink more easily into your understanding, then by all your reading they can do. Therefore as we have spoken of such things as will do this feat, so also we will teach you to work artificially. Take an earthen pot, and set it upon the fire with very hot coals heaped round about it, put Lead into it, and when you see that Lead is molten by the force of the fire, take the third part of so much Silver as there was Lead, and pound it into small powder, and put it to the Lead into the pot. But you must sprinkle it in only by little and little, that it may be scorched, and even burned as it were by the heat of the fire, and may float like as it were oil on the top and surface of the Lead, and some of it may be so wasted by the vehemence of the heat, that it will vanish away into the smoke. Then let them rest a while, so long as there be any remainders of the coals left. After you have so done, break the vessel into pieces, and take away the scum and Dross of the metal. And whereas there will stand on the top of the metal a certain oil as it were, or kind of jelly, you must take that, and break it in a Mortar, and cast it into a vessel by little and little where there is Brass melted, though the Brass be three times so much in

weight as that jelly is, yet the jelly will endue all that Brass with a white Silver color. Nay, if there be more then three times so much melted Brass put into that metal, it will make it all like unto Silver. But if you would have your Brass endued with a perfect white color, and not discernible from Silver, you must melt some Silver and some Brass together, and then throw them into the fire, and so take them out again after some short time. For the longer you suffer them in the fire, the worse will your experiment succeed. Which is a matter most worthy to be observed in these cases. For if your work continue any longer in the fire then need requires, it will fade in color, and the violence of the fire will countermand the effect of your skill and labor in tempering the metals together, and so the Brass will recover his former cover in his first estate. Wherefore let your metals be kept in the fire as little while as you can, that you may make your Brass the whiter, and in time will wax blackish and dim again. For the Arsenic that is naturally incorporated into the Brass, will always strive to restore it to the former duskish and dim color which it is by nature endued withal. We will now also teach you another way how to make...

#### "Brass to Counterfeit Silver II..."

And this is a more excellent and notable experiment then the former. Take six ounces of the Lees of wine, eight ounces of crystal Arsenic , half an ounce of Quicksilver that has been sublimated, two ounces of Saltpeter, one ounce and an half of Glass. Beat all these together in a mortar, and see that they be broken into the smallest powder and dust that may be. After this, take three pounds of Copper, that which is commonly called Banda Mediolanensis. This you must have to be drawn out into small thin and slender plates. And when you have thus prepared your metals and ingredients, you must take of that powder, and sprinkle it into an earthen pot by little and little, and withal put into the same pot your slender plates of Copper. And these things you must do by course, first putting in some of your powder, and then some of your Copper, and afterward some powder again, and afterward some of your little plates again, and so by turns one after another, till the pot be brim full. Then set a cover upon your pot, and plaster it all over singularly well with good stiff Mortar that is tempered with chopped Straw, then bind it round about with bands and clamps of Iron, and truss it up very hard and stiff together, and then cover it over again with such Mortar as before. Afterward let the pot be made hot with a great fire round about it. The manner of the heating of your pot must be this, set the pot in a center as it were, that the fire may lie in a circumference round about it, to the distance of one foot from the center. A little after this, move your fire nearer to the pot, that there may not be above the distance of half a foot between them, then within a while lay the fire a little nearer, and so by little and little let the fire be brought close to the pot, yes and let the pot be covered all over with hot burning coals, within the space of one hour, and so let it stand hidden in the fire for the space of six whole hours. After the six hours, you must not take away the coals, but let them go out and die of themselves, and let the pot so stand under them until it be stark cold. And when it is thoroughly cold, break it into pieces, and there you shall find your little thin plates so brittle, that if you do but touch them some what hard with your fingers, they will soon be crumbled into dust. When you have taken them out of the pot, you must afterward put them into some casting vessel that is very hard, and durable, and there within half an hour it will be melted. Then put into it some of your powder by little and little, till all of is be molten together. Then cast it all forth into some hollow place, into some form or mold, that it may run along into rods, and the metal will be as brittle and as easy to be broken into small crumbs, as any ice can be. After all this, you must melt two pounds of Brass, but you must first purify it and cleanse it a little, by casting upon it some broken Glass, and Lees of wine, and Salt Ammoniac, and Saltpeter, every one of them by turns, and by little and little. When you have thus cleansed it, you must put unto it one pound of that metal which you made of the Copper and powder before spoken of, and you must still sprinkle upon them some of that powder, and after all this, you must take half so much of the best Silver that may be gotten, and melt it among the metals before spoken of and cast them all together into some hollow place like a mold, and so you

shall obtain your purpose. But that the surface and the utmost outsides of the metal may appear white, you must throw it into the fire, that it may be burning hot, and then take it forth, and cast it into that water wherein the Lees of wine and ordinary Salt have been liquefied and dissolved, and there let it boil for a certain time, and so shall you make it very white, and moreover so pliant and so easy to be framed and wrought to any fashion, that you may draw it through any little hole, yea even through the eye of a needle. Furthermore, this is not to be omitted nor buried in silence, for it is a matter of great use, and special force in the coloring of metals, that they be inwardly cleansed and purged of their Dross, that they may be thoroughly washed and rid of all such scum and Offal's, as are incident unto them. For being thus handled, they will be more serviceable and operative for all experiments. As for example, let Brass be molten, and then quenched in Vinegar, and then reduced into powder with Salt, so that the more gross and infectious parts thereof be extracted from it. And let it be so handled oftentimes, till there be nothing of its natural uncleanness remaining with it, and so shall it receive a deeper dye, and be changed into a more lively color. Let the vessel wherein you melt your metals to prepare and them and make fit for your turn, be bored through the bottom with sundry holes, that the metal being melted may strain through, but the Dross and scum, and Offal's of it may be left behind, that there be nothing but pure metal to be used in your experiments. For the less Dross and Offal's that your metal have, they are so much the more serviceable for your use in working. Let this therefore be a general rule always to be remembered and observed, that your metals be thoroughly purged and rid from their Dross as much as may possibly be, before ever you entertain any of them into your service for these intendments. There is yet also another way whereby we may bring to pass that...

#### "Brass should resemble Silver"

And this by Arsenic Opine, which is an effectual means to accomplish this matter. And whereas in tract of time the metal will somewhat recover itself to its own former paleness and dim color, we will seek to remedy it and prevent it. The best Arsenic Opine that may be gotten, such as Yaws and gapes as though it had scales upon it, it must be of a very orient golden color, and must meddle this Arsenic Opine with the dust of Brass that has been filed from it, and put into them some Lees of wine, but they must be each of them of an equal weight and quantity when you drench them together within the Liquor, and so shall it bear a continual orient color, and glitter very bright without ever fading at all. After this, take you some Silver, and dissolve with that kind of water which is called Aquafortis but it must be such as has in it very little store of moisture, for the most waterish humor that is in it, must be evaporated in some scalding pot or other such vessel, which you must fill up to the brim six or seven times, with the same water, after the vapors of it have been extracted by the heat of the fire that is under the vessel. When you have thus done, you must mingle your Silver that is so dissolved, with the Brass filings, and the Arsenic Opine which we spoke of before, and then you must plain it and smooth it all over with the red marble-stone, that the clefts or scales before spoken of, may be closed up, and withal, you must water it by little and little, as it were drop after drop with the oil that has been expressed or extracted out of the Lees of Wine, or else out of the most firm Salt Ammoniac that may be had. And when the sun is gotten up to any strength, that it shows forth itself in very hot gleams, you must bring forth this confection, and let the force of the heat work upon it, even till it be thoroughly dry. Afterward you must supple it with more of the same oil again, and then let it be dried up again so long, till that which is remaining does weigh just so much as the Silver weighted before it was dissolved. Then close up the vessel of Glass, and lay it under some dunghill till it be dissolved again, and after the dissolution be gathered together into a jelly, then cast into it ten or eight pieces of Brass, and it will color them all, into the most lively Counterfeit Silver. But if you desire..

"To make Brass show itself of a Silver color, by rubbing it between your hands..."

As boys and cozening companions are often found to do, that if they do but handle any vessels of Brass, they will make them straight-away to glitter like Silver, you may use this method. Take Salt Ammoniac, and Alome, and Saltpeter, of each of them an equal weight, and mingle them together, and put into them a small quantity of Silver-dust, that has been filed off. Then set them all to the fire, that they may be thoroughly hot, and when the fume or vapor is exhaled from them, that they have left reeking, make a powder of them, and whatsoever Brass you cast the powder upon, if you do withal, either wet it with your own spittle, or else by little and little rub it over with your fingers, you shall find that they will seem to be of a Silver color. But if you would whiten such Brass more handsomely and neatly, you must take another course. You must dissolve a little Silver with Aqua-fortis, and put unto it so much Lees of wine, and as much Salt Ammoniac, let them so lie together till they be about the thickness of the filth that is rubbed off from a mans body after his sweating. Then roll it up in some small round balls, and so let them wax dry. When they are dry, if you rub them with your fingers upon any Brass or other like metal, and still as you rub them moisten them with a little spittle, you shall make that which you rub upon to be very like unto Silver. The very like experiment may be wrought by Quicksilver, for this has a wonderful force in making any metal to become white. Now, whereas we promised before, to teach you, not only how to endue Brass of such other metal with a Silver color, but also how to preserve and keep the bodies so colored from returning to their former hew again, you must beware that these bodies which are endued with such a Silver color, do not take hurt by any sharp or sour Liquor, for either Urine, or Vinegar, or juice of Lemons, or any such tart and sour Liquor, will cause this color soon to fade away, and so discredit your work, and declare the color to those metals to be false and Counterfeit.

## Chapter IV

### "Of Iron, and how to transform it into a more worthy metal"

Now the order of my proceedings requires, that I should speak somewhat also concerning Iron, for this is a metal which the Wizards of India did highly esteem, as having in it much goodness, and being of such a temperature, that it may easily be transformed into a more worthy and excellent metal than itself is. Notwithstanding, some there are, which reject this metal as altogether unprofitable, because it is so full of gross earthly substance, and can hardly be melted in the fire, by reason of that firm and settled Brimstone which is found in it. But if any man would,

### "Change Iron into Brass,"

So that no part of the gross and earthly substance shall remain in it, he may easily obtain his purpose by Coppresse or Vitriol. It is reported that in the mountain Carpatus a Hill of Pannonia, at a certain town called Smolinitium, there is a lake, in which there are three channels full of water. And whatever Iron is put into those channels, it is converted into Brass. And if the Iron which you cast into them is in small pieces or little clumps, presently they are converted into mud or dirt. But if that mud be baked and hardened in the fire, it will be turned into perfectly good Brass. But there is an artificial means whereby this also may be affected. It is to be done this way. Take Iron, and put it into a casting vessel, and when it is red hot with the vehement heat of the fire, and that it begins to melt, you must cast upon it by little and little some sprinkling of Brimstone. Then you must pour it forth, and cast into small rods, and beat it with hammers. It is very brittle, and will easily be broken.

Then dissolve it with Aquafortis. Such as is compounded of Vitriol and Alome tempered together. Set it upon hot cinders until boiling, and is dissolved into vapors, and to quite vanish away. And the substance thereof, or the rubbish that remains behind, if it is reduced into one solid body again, will become good brass. If you would,

"Make Iron to become white,"

You may effect it by diverse and sundry sleights. Yet let this only device content you in this matter. First, you must cleanse and purge your Iron of the Dross and refuse that is in it. And of that poisoned corruption of Rust that it is generally infected with. For it has more earthly substance and parts in it then any other metal has. So much that if you boil it and purge it never so often, it will still of itself yield some new excrements. To cleanse and purge it, this is the best way. Take some small thin plates of Iron, and make them red hot. Then quench them in strong Lye and Vinegar which have been boiled with ordinary Salt and Alome. And this you must use to do with them often, until they are somewhat whitened. The fragments or scrapings also of Iron, you must pound in a Mortar, after they have been steeped in Salt. And you must bray them together till the Salt is quite changed, so that there is no blackness left in the Liquor of it. And until the Iron is cleansed and purged from the Dross that is in it. When you have thus prepared your Iron, you must whiten it in this manner. Make a plaster as it were, of Quicksilver and Lead tempered together. Then pound them into powder, and put that powder into an earthen vessel among your plates of Iron that you have prepared to be whitened. Close up the vessel fast, and plaster it all over with Mortar, so that there may be no breathing place for any air either to get in or out. Then put it into the fire, and there let it stay for one whole day together, and at length increase your fire, that it may be so vehement hot as to melt the Iron. For the plaster or confection which was made of Lead and Quicksilver , will work in the Iron two effects. First, it will dispose it to melting, that it shall soon be dissolved. And secondly, it will dispose it to whitening, that it shall the sooner receive a glittering color. After all this, draw forth your Iron into small thin plates again, and proceed the second time in the same course as before, till you find that it has taken so much whiteness as your purpose was to endue to it. In like manner, if you melt in a vessel that has holes in the bottom of it, and melt with it Lead, and the Marchasite or Fire-stone, and Arsenic and such other things we spoke of before in our experiments of Brass, you may make Iron also to become white. If you put among it some Silver, though not much, it will soon resemble the color of Silver. For Iron does easily suffer itself to be melted with Gold or Silver. And they may be so thoroughly incorporated into each other, that by all the rules of separation that can be used, you cannot without great labor, and very much ado separate the one of them form the other.

## Chapter V

"Of Quicksilver , and of the effects and operations thereof."

In the next place it is time that we speak something concerning Quicksilver and the manifold operations thereof. Wherein we will first set down certain vulgar and common congelations that it makes with other things, because many men do desire to know them. And secondly, we will show, how it may be dissolved into water, that they which are desirous of such experiments, may be satisfied herein. First therefore we will show,

"How Quicksilver may be congealed and curdled as it were with Iron."

Put the Quicksilver into a casting vessel, and put together with it that water, which the Blacksmith has used to quench his hot Iron in. And put in also among them Salt Ammoniac, and Vitriol and Verdigrase. Twice so much of every one of these, as there was Quicksilver . Let all these boil together in an exceeding great fire, and still turn them up and down with an Iron slice or ladle. And if at any time the water boils away, you must be sure that you have in readiness some of the same water through hot to cast into it, that it may supply the waste which the fire has made, and not yet hinder the boiling. Thus will they be congealed all together within the space of six hours. After this, you must take the congealed stuff when it is cold and bind it up hard with your hands in Leather thongs, or Linen cloth, or Osiers, that all the juice and moisture that is in it, may be squeezed out of it. Then let that which is squeezed and drained out, settle itself and be congealed once again, till the whole confection is made. Then put it into an earthen vessel well washed, and among it some spring-water, and take off as near as you can, all the filth and scum that is upon it and is gone to wasted. An in that vessel you must temper and diligently mix together your congealed matter with spring-water, till the whole matter be pure and clear. Then lay it abroad in the open air three days and three nights, and the subject which you have wrought upon will wax thick and hard like a shell or a tile shard. There is also another congelation to be made with Quicksilver .

#### "Congealing of Quicksilver with balls of Brass."

Thus, make two Brass half circles, that they may fasten one within the other, that nothing may exhale. Put into them Quicksilver, with an equal part of white Arsenic and Tartar well powdered and seirced. Lute the joints well without, that nothing may breath forth. So let them dry, and cover them with coals all over for six hours. Then make all red hot, then take it out and open it, and you shall see it all coagulated and to stick in the hollow Brass ball. Strike it with a Hammer, and it will fall off. Melt it, and project it, and it will give an excellent color like to Silver, and it is hard to discern it from Silver. If you will, you may mingle it with three parts of melted Brass, and without Silver, it will be exceeding white, soft and malleable. It is also made another way. Make a great cup of Silver, red Arsenic and Latin, with a cover that fits close, that nothing may exhale. Fill this with Quicksilver, and lute the joints with the white of an Egg, or some Pine tree Rosin, as it is commonly done. Hang this into a pot full of Linseed oil, and let it boil twelve hours. Take it out, and strain it through a skin or straw. And if any part is not coagulated, do the work again, and make it coagulate. If the vessel does coagulate it slowly, so much as you find it has lost of its weight of the Silver, Arsenic and Alchemy make that good again, for we cannot know by the weight. Use it, it is wonderful that the Quicksilver will draw to itself out of the vessel, and Quicksilver will enter in. Now I shall show what may be sometimes useful,

#### "To draw water out of Quicksilver."

Make a vessel of Potters Earth, that will endure the fire, of which Crucibles are made six foot long, and of a foot diameter. Glassed within with Glass, about a foot broad at the bottom, a finger thick, narrower at the top, bigger at the bottom. About the neck let there be a hole as big as one's finger, and a little pipe coming forth, by which you may fitly put in the Quicksilver. On the top of the mouth let there be a Glass cap, fitted with the pipe, and let it be smeared with clammy Clay, and bind it above that it breaths not forth. For this work make a furnace, let it be so large at the top, that it may be fit to receive the bottom of the vessel, a foot broad and deep. You must make the grate the fire is made upon, with that art, that when need is you may draw it back on one side, and the fire may fall beneath. Set therefore the empty vessel into the furnace, and by degrees kindle the fire. Lastly, make the bottom red hot. When you see it to be so, which you may know by the top, you must look through the glass cap. Presently by the hole prepared pour in ten or fifteen pounds of Quicksilver. And presently with clay cast upon it stop that hole, and take away the grate that the fire may fall to

the lower parts, and forthwith quench it with water. Then you shall see that the water of Quicksilver will run forth as the nose of the cap, into the receiver under it, about an ounce in quantity. Take the vessel from the fire, and pour forth the Quicksilver, and so as before, and always once ounce of water will distill forth. Keep this for chemical operations. I found this the best for to Smug up women with. This artifice was found to purify Quicksilver. I shall not pass over another art, no less wonderful than profitable for use,

"To make Quicksilver grow to be a Tree."

Dissolve Silver in Aquafortis, what is dissolved evaporate into thin air at the fire, that there may remain at the bottom a thick unctious substance. Then Distill fountain water twice or thrice, and pour it on the thick matter, shaking it well. Then let it stand a little, and pour into another glass vessel the most pour water, in which the Silver is. Add to the water a pound of Quicksilver, in a most transparent crystalline glass that will attract to it that Silver. And in the space of a day there will spring up a most beautiful tree from the bottom, and hairy, as made of most fine beards of Corn, and it will fill the whole vessel, that the eye can behold nothing more pleasant. The same is made of Gold with Aquaregia.

## Chapter VI

"Of Silver."

I shall teach how to give Silver a Tincture that it may show like to pure Gold, and after that, how it may be turned to a true Gold.

"To give Silver a gold color,"

Burn burnt Brass with Stibium, and melted with half Silver. It will have the perfect color of Gold. And mingle it with Gold, it will be the better color. We boil Brass thus. I know not anyone that has taught it. You shall do it after this manner. Melt Brass in a Crucible, with as much Stibium. When they are both melted, put in as much Stibium as before, and pour it out on a plain Marble stone, that it may cool there, and be fit to beat into plates. Then shall you make two bricks hollow, that the plates may be fitly laid in there. When you have fitted them, let them be closed fast together, and bound with Iron bands, and well luted. When they are dried out put them in a Glass Fornace, and let them stand within for a week, to burn exactly. Take them out and use them. And,

"To Tincture Silver into Gold.,"

You must do thus. Make first such a tart Lye, put Quicklime into a pot, whose bottom is full of many small holes, put a piece of wood or tile shard upon it, then by degrees pour in the powder and hot water. And by the narrow holes at the bottom, let it drain into a clean earthen vessel under it. Do this again, to make it exceedingly tart. Power Stibium and put into this, that it may evaporate into the thin

air. Let it boil at an easy fire. For when it boils, the water will be of a purple color. Then strain it through a Linen cloth. Again, pour on the Lye on the powders that remain, and let it boil so long at the fire, until the water seems of a bloody color no more. Then boil the Lye that is colored, putting fire under, till the water is all exhaled. But the powder that remains being dry, with the Oil of Tartar dried and dissolved, must be cast again upon plates made of equal parts of Gold and Silver, with an earthen Crucible. Cover it so long with coals, and renew your work, till it be perfectly like to Gold. Also I can make the same,

"Otherwise,"

If I mingle the congealed Quicksilver that I speak of with a cap, with a third part of Silver, you shall find the Silver to be of a golden color. You shall melt this with the same quantity of Gold, and put it into a pot. Pour on it very sharp Vinegar and let it boil a quarter of a day, and the color will be augmented. Put this to the utmost trial of Gold, that is, with common Salt, and powder of bricks, yet adding Vitriol, and so shall you have refined Gold. We can also extract,

"Gold out of Silver,"

And so little but it will pay your cost, and afford you much gain. The way is this. Put the fine filings of Iron into a Crucible that will endure fire, until it grows red hot, and melts. Then take artificial Chrysocolla, such as Goldsmiths use to Solder with, and red Arsenic, and by degrees strew them in. When you have done this, cast in an equal part of Silver, and let it be exquisitely purged by a strong vessel made of ashes. All the dregs of the Gold being now removed, cast it into water of separation, and the Gold will fall to the bottom of the vessel, take it. There is nothing of many things that I have found more true, more gainful, or more hard. Spare no labor, and do it as you should, lest you lose your labor. Or otherwise, let the thin filings of Iron soak for a day in Sea-water, let it dry, and let it be red hot in the fire so long in a Crucible, till it runs. Then cast in an equal quantity of Silver, with half Brass, let it be projected into a hollow place. Then purge it exactly in an ash vessel. For the Iron being excluded and its dregs, put it into water of separation, and gather what falls to the bottom, and it will be excellent Gold. May be it will be profitable to,

"Fix Cinnaber."

He that desires it, I think he must do thus. Break the Cinnaber into pieces as big as Walnuts. Put them into a Glass vessel that is of the same size, and the pieces must be mingled with thrice the weight of Silver, and laid by courses, and the vessel must be luted, and suffer it to dry, or set it in the Sun. Then cover it with ashes, and let it boil so long on a gentle fire, till it becomes of a lead color and breaks not. Which will not be unless you tend it constantly until you come so far. Then purge it with a double quantity of Lead. And when it is purged, if it be put to an easy fire you use, the better will the business be effected. But so shall we try to repair Silver, and revive it when it is spoiled. Let Sublimate Quicksilver boil in Distilled Vinegar, then mingle Quicksilver, and in a Glass Retort, let the Quicksilver evaporate in a hot fire, and fall into the Receiver. Keep it. If you are skillful, you shall find but little of the weight lost. Others do it with Regulus of Antimony. But otherwise you shall do it sooner and more gainfully thus. Put the broken pieces of Cinnaber as big as Dice, into a long Linen bag, hanging equally from the pot sides. Then pour on the sharpest Vinegar, with Alome and Tartar, double as much, Quicklime in four parts, and as much Oak ash, as it is usual to be made. Or you must make some. Let it boil a whole day, take it out and boil it in oil. Be diligent about it, and let it stay there twenty-four hours. Take the pieces of Cinnaber out of the oil, and smear them with the white of an Egg beaten. And roll it with a third part of the filings of Silver. Put it into the bottom of a convenient vessel, and lute it well with the best earth, as I said. Set it to the fire three days, and at

last increase the fire, that it may almost melt and run. Take it off, and wash it from its faces that are left, at the last proof of Silver, and bring it to be true and natural. Also it will be pleasant,

"From Fixt Cinnaber to draw out a Silver beard."

If you put it into the same vessel, and make a gentle fire under, Silver that is pure not mixed with Lead, will become hairy like a wood, that there is nothing more pleasant to behold.

## Chapter VII

"Of Operations necessary for use."

I thought fit to set down some operations which are generally thought fit for out works. And if you know them not, you will not easily obtain your desire. I have set them down here, that you might not be put to seek them elsewhere. First,

"To draw forth the life to Tin."

The filings of Tin must be put into a pot of earth, with a equal part of Saltpeter. You shall set on the top of this seven, as many other earthen post with holes bored in them. And stop the holes well with Clay. Set above this a Glass vessel with the mouth downwards, or with an open pipe, with a vessel under it. Put fire to it, and you shall hear it make a noise when it is hot. The life flies away in the same, and you shall find it in the hollow pots, and in the bottom of the glazed vessel compacted together. If you bore an earthen vessel on the side, you may do it something more easily by degrees, and you shall stop it. So also,

"From Stibium."

We may extract it. Stibium that Druggists call Antimony, is ground small in Handmills. Then let a new Crucible of earth be made red hot in a Coal fire. Cast into it presently by degrees, Stibium, twice as much as Tartar, four parts Saltpeter, finely powdered. When the fume rises, cover it with a cover, lest the fume rising evaporates. Then take it off, and cast in more, until all the powder is burned. Then let it stand a little at the fire, take it off and let it cool, and skim off the dregs on the top, and you shall find at the bottom what the Chemists call the Regulus. It is like Lead, and easily changed into it. For says Dioscorides, should it burn a little more, it turns to Lead. Now I will show how one may draw a more noble metal.

"To the out-side,"

As foolish Chemists say. For they think that by their impostures they do draw forth the parts lying in the middle, and that the internal parts are the basest of all. But they error much. For they eat only the outward part of the supersicies, that are the weakest, and a little Quicksilver is drawn forth, which I approve not. For they corrode all things that their Medicament enters. The harder parts are left, and are polished and whitened. Maybe they are persuaded of this by the metals of the Ancients, that

were within all Brass, but outwardly seemed like pure Silver. But those were Soldered together, and beaten with hammers, and then Stamped. Yet it is very much to do it as they did, and I think it cannot be done. But the things that polish are these, common Salt, Alom, Vitriol, quick Brimstone. And for Gold, only Verdigrease, and Salt Ammoniac. When you would go about it, you must powder part of them, and put them into a vessel with metal. The Crucible must be luted with Clay, and covered. There must be left but a very small hole for the perspiration. Then set it in a gentle fire, and let it burn and blow not, lest the metal melt. When the powders are burnt they will sink down, which you shall know by the smoke, then take off the cover and look into them. But men make the metal red hot, and then when it is hot they drench it in. Or otherwise, they put it in Vinegar till it becomes well cleansed, and when you have wrapped the work in Linen rags, that was well luted, cast it into an earthen vessel of Vinegar, and boil it long. Take it out and cast it into Urine. Let it boil in Salt and Vinegar, till no filth almost rise, and the foul spots of the ingredients are gone. And if you find it not exceeding white, do the same again till you come to perfection. Or else proceed otherwise by order. Let your work boil in an earthen pot of water, with Salt, Alom, and Tartar. When the whole supersicies is grown white, let it alone a while. Then let them boil three hours with equal parts of Brimstone, Saltpeter, and Salt, that it may hang in the middle of them, and not touch the sides of the vessel. Take it out, and rub it with sand, till the fume of the Sulfur is removed again. Let it boil again as at first and so it will wax white, that it will endure the fire, and not be rejected for Counterfeit. You shall find it profitable it you do it well. And you will rejoice, if you do not abuse it to your own ruin.

## Chapter VIII

"How to make a metal more weighty."

It is question among Chemists, and such as are addicted to those studies, how it might be that Silver might equal Gold in weight. And how every metal might exceed its own weight. That may be also made of Gold, without any detriment to the Stamp or engraving. And Silver may increase and decrease in its weight, if so be it made into some vessel. I have undertaken here to teach how to do that easily, that others do with great difficulty. Take this rule to do it by, that,

"The weight of a golden vessel may increase,"

Without hurting the mark, if the magnitude does not equal the weight. You shall rub gold with thin Silver, with your hands or fingers, until it may drink it in, and make up the weight you would have it, sticking on the surfaces. Then prepare a strong Lixivium of Brimstone and Quicklime, and cast it with the gold into an earthen pot with a wide mouth. Put a small fire under, and let them boil so long, till you see that they have gained their color. Then take it out, and you shall have it. Or else draw forth of the yolks of Eggs and the Litharge of Gold, water with a strong fire, and quench red hot Gold in it, and you have it.

"Another that is excellent."

You shall bring Silver to powder, either with Aquafortis, or Calx. The Calx is afterwards washed in

water. To wash away the Salt, wet a golden vessel or plate with water or Spittle, that the quantity of the powder you need may stick on the outward surfaces. Yet put it not on the edges, for the fraud will be easily discovered by rubbing it on the Touch-stone. Then powder finely Salt, one third part, Brick as much, Vitriol made red two parts. Take a Brick and make a hole in it as big as the vessel is. In the bottom then strew Alom de plume. Then again pour on the powder with your work until you have filled the hole. Then cover the hole with another Brick. Fasten it with an Iron pin and lute the joints will with Clay. Let this dry, and let it stand in a reverberating fire about a quarter of a day. And when it is cold, open it, and you shall find the Gold all of a Silver color, and more weighty, without any hurt to the Stamp. Now to bring it to its former color, do thus. Take Verdigrease four parts, Salt Ammoniac two parts, Saltpeter a half part, as much Brick, Alom a fourth part. Mingle these with the waters, and wash the vessel with it. Then with Iron Tongs put it upon burning coals that it may be red hot. Take it off, and plunge it in Urine, and it will regain the color. The remedy is to wet it in Urine, and let it stand on a plate red hot to cool. But thus you shall make Vitriol very red. Put it into a vessel covered with coals, and boil it till it changes to a most bright red. Take it out and lay it aside, and do not use it for an ill purpose. We may with the fragments of Brass,

"Do this business otherwise."

That shall supply the place of Silver, and it shall become too weighty. Or otherwise, melt two parts of Brass with Silver, then make it into small thin plates. In the mean while, make a powder of the dregs of Aquafortis, namely of Saltpeter and Vitriol, and in a strong melting vessel, put the plate and the powder to augment Gold. Fill the vessel in a preposterous order. Then lute the mouth of it, and set it in a gentle fire half a day. Take it off, always renewing the same until it comes to the desired weight. We have taught how to increase the weight, and not hurt the fashion or Stamp. Now I shall show how without loss of weight, not yet the Stamp being hurt.

"Gold and Silver may be diminished."

Some use to do it with Aquafortis, but it makes the work rough with knots and holes. You shall do it therefore thus. Strew powder of Brimstone upon the work, and put a candle to it round about. Or burn it under your work, by degrees it will consume by burning. Strike it with a Hammer on the opposite side, and the surfaces will fall off. As much in quantity as you please, as you use the Brimstone. No shall I show how,

"To separate Gold from Silver cups that are gilded."

For it is often a custom of Goldsmiths to melt the vessels and cast them away, and to make new ones again. Not knowing how without great trouble, to part the Gold from the Silver, and therefore melt both together. To part them, do thus. Take Salt Ammoniac, Brimstone half a part. Powder them, and anoint the gilded part of the vessel with oil. Then strew on the powder, and the vessel in a pair of Tongs, and put it into the fire. When it is very hot, strike it with an iron, and the powder shaken will fall into the water, in a platter under it, and the vessel will remain unaltered.

"Another Way."

Put Quicksilver into an earthen vessel with a very wide mouth, and let it heat so long at the fire, that you can endure the heat of it with your finger put into it. Put the Gilt plate of Silver into it, and when the Quicksilver sticks to the Gold, take it out and put it into a Charger, into which the Gold, when it is cold, will fall with the Quicksilver. Going over this work again, until no more Gold appears in the vessel. Then put the Gold with the Quicksilver that was shaken into the Charger, into a Linen clout,

and press it out with your hands. And let the Quicksilver fall into some other Receiver. The Gold will stay behind in the rag. Take it and put it into a coal made with a hole in it. Blow till it melts. Make it into a lump and boil it in an earthen vessel with a little Stibium. Pour it forth into another vessel, that the Gold may fall to the bottom, and the Stibium stays on top. But if you will,

"Part Gold from a vessel of Brass."

Wet the vessel in cold water, and set it in the fire. When it is red hot, quench it in cold water. Then scrape off the Gold with Latin wire bound together.

## Chapter IX

"To part metals without Aquafortis"

Because waters are drawn from salts with difficulty, with loss of time and great charges. I shall show you how to part Gold from Silver and Brass, and Silver from Brass, without Aquafortis. But by some easy operations, will little cost or loss of time. And first I shall show how,

"To part Gold from Silver ."

Cast a lump of Gold mixed with Silver into an earthen vessel, That will hold fire, with the same weight of Antimony, thus. When the vessel is red hot, and the lump is melted, and turned about with the force of the fire. Cast a little Stibium in, and in a little time it will melt also. And when you see it, cast in the rest of the Stibium in, and in a cover the vessel with a cover. Let the mixture boil, as long as one may repeat the Lords prayer. Take away the vessel with a pair of Tongs, and cast it into another Iron pyramidal vessel red hot, called a Crucible, that has in the bottom of it Ram's fat. Shaking it gently, so that the heavier part of Gold separated from the Silver, may fall to the bottom. When the vessel is cold it is shaken off, and the part next the bottom will be Gold , the upper part Silver. And if it be not well parted, refuse not to go over the same work again, but take a less quantity of Stibium. Let therefore the Gold be purged again, and let the Stibium be boiled, and there will be always at the bottom a little piece of Gold. And as the dregs remain, after the same manner purge them again in the Coppel, and you shall have your Silver, without any loss of the weight, because they are both perfect bodies. But the Silver only will lose a little. But would you have your Silver to lose less, do thus. Add to two pounds and a half of Stibium, Wine Lees two pounds. And boil them together in an earthen vessel, adding pieces of Lead to it. Purge it in a Coppel. Wherein the other things being consumed by the fire, the Silver only will remain. But if you do not boil your Stibium in Wine Lees, as I said, part of the Silver will be lost, and the Coppel will draw the Silver to it. The same may be done,

"Another Way."

Take three ounces of Brimstone, powder them, and mingle them with one ounce of common oil, and set them to the fire in a glazed dish of earth. Let the fire be first gentle, then augment it, till it runs, and seems to run over. Take it back from the fire, and let it cool, then cast it into sharp Vinegar, so the oil will swim above the Vinegar. The Brimstone will fall down to the bottom. Cast away the

Vinegar, and let the Brimstone boil in strong Vinegar, and you shall see the Vinegar colored. You shall strain the Vinegar through a Wisp into a glass vessel. To which add more Brimstone. Boil it again, and again strain out the lye into the vessel. Doing this so often, till the Lixivium comes forth muddy, or of a black color. Let the Lixivium settle one night. Again strain it through a Wisp, and you shall find the Brimstone almost white at the bottom of the vessel. Add that to what you had before, and set it again to boil with three parts as much distilled Vinegar. Until the Vinegar all evaporates and the Brimstone is dry. Take heed not to let it burn. When it is dry, put it again into distilled Vinegar, working the same way so often, until putting a little of it upon a red hot plate of iron, it will melt without flame or smoke. Then cast it on a lump of Gold and Silver, and the Gold will sink to the bottom presently. But the Silver will remain on the top. For if Brimstone is boiled in Lixivium so strong, that it will bear an Egg, until it will not smoke, and will melt on a fire coal. If it is projected on a mass of Gold and Silver mingled, when they are melted, it will part the Gold from the Silver. Also there is an ingenious and admirable way,

"To part Silver from Brass,"

With certain powders. The best are those made of powdered Lead, half so much quick Brimstone, Arsenic, and common Salt, Saltpeter one half. Powder those fine each by themselves, then mingle them. The mixed metal, with half so much more of the powder, and in a vessel that will endure fire. Strew it in by turns, and set the vessel filled at a strong fire, till all melt. Take it out and cast it into another vessel, that is broad on top, narrow at the bottom, and hot, as we said, and smeared with Ram or Sow's grease clarified. Let it cool, for you shall find the Silver at the bottom, and the Brass on the top. Part one from the other with an Iron Rasp or file. If you will, you may purge your Silver again in a Coppel. But the Silver must be made into thin plates, that when it is strewn interchangeably with powders, they may come at it on all sides. Then cover the vessel with its cover, and lute it well. But the Salt must be decrepitated that it leap not out, and the Brimstone prepared and fixed. But we may thus,

"Part Gold from Brass."

Make Salt of these things that follow, namely, Vitriol, Alom, Saltpeter, quick Brimstone, of each a pound, Salt Ammoniac half a pound. Powder them all, and boil them in a Lye made of ashes, one part, as much Quicklime, four parts of Beech ashes. Melt them at the fire, and decant them, and boil them until the Lixivium be gone. Then dry it, and keep it in a place not moist, let it melt. And mingle with it one pound of powder of Lead, and strew on of this powder six ounces for every pound of Brass made hot in a melting vessel. And let them be shaken, and stirred vehemently with an Iron thing to stir it with. When the vessel is cold, break it, you shall find a lump of Gold in the bottom. Do the rest as I said.

## Chapter X

"A compendious way to part Gold or Silver from other metals with Aquafortis."

We shall teach thus compendiously to part Gold from Silver, and Silver from other metals. And it is no small gain to be got by it, if a man well understood what I write. For I have known some by this art

that have obtained great wealth. For example, take a mixture of Brass and Silver. Dissolve it in common Aquafortis. When it is consumed, cast fountain-water into it. To remove the sharpness of the water, and that it can no more corrode the metal. Put the water into a great mouthed earthen vessel, and plunge plates of Brass therein. For the Silver will stick to them like a cloud. The Brass is best in the water. Put the water into a glass Retort with a large belly, an you know that the whole quantity of fountain water is distilled out. Or the belly of the Retort looks of a yellow color. And the sent of the salts pierces your nostrils. Take away the Receiver, and put another that is empty to it, and lute it well that nothing breaks forth. Augment the fire, and you shall draw off you Aquafortis as strong as before, and the Brass will be at the bottom of the Retort. The Aquafortis will be as good as it was, and you may use it often.